

Medio P232, P233 Readers
User's Guide
Revision 1.0

October 2010

Publishing Information

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Printed in France.

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Document Reference: DOC14199A0



Read This First

Welcome to the TAGSYS range of products operating at the 13.56 MHz frequency. This range of products is used to implement high-quality RFID systems for demanding applications.

Audience

This document requires familiarity with RFID technology. It is intended for people in charge of installing and using the product.

Conventions

Symbol	Meaning
	CAUTION: A note that advises users that a specific action could result in the loss of data or damage the hardware. WARNING: A note that advises users that a specific action may result in physical harm.
	A note that provides additional information that helps the user to perform a task or obtain the best performance from the product.

Abbreviations and Acronyms

AFI	Application Family Identifier
AON	All Or None
API	Application Programming Interface
ASK	Amplitude Shift Keying
CPU	Central Processing Unit
CRC	Cyclic Redundancy Check
DLL	Dynamic-Link Library
DPU	Digital Processing Unit
DSFID	Data Storage Format Identifier
DSP	Digital Signal Processor
EAS	Electronic Article Surveillance
ETX	End of Text
HPI	Host Port Interface
I/O	Input/Output
IFD	Interface Device
LED	Light Emitting Diode
LSB	Least Significant Bit

MSB	Most Significant Bit
OS	Operating System
PC	Personal Computer
PCB	Printed Circuit Board
RAM	Random Access Memory
RF	Radio Frequency
RFID	Radio Frequency Identification
RFU	Reserved for Future Use
RPU	Radio Processing Unit
RTC	Real Time Clock
RTF	Reader Talks First
SAM	Security Access Module
STX	Start of Text
TTF	Tag Talks First
TTL	Transistor-Transistor Logic
TTY	TeleTYpe
UID	Unique Identifier

Glossary

Anti-Collision Tag capability making it readable while other tags are present in the RF field.

Antenna An aerial that receives and/or transmits radio frequency signals. Aerials are manufactured in a variety of forms, shapes and sizes.

Baud A unit of measure of data transmission speed representing the number of signal changes per second.

BNC Connector Cylindrical metal connector with a copper core that is located at the tip of a coaxial cable, and is used to connect cables together. It attaches by pushing and twisting the outer cylinder on to two locking pins.

Coupler See Reader.

Data Storage Format Identifier Identifies the structure of the data stored in the smart label.

Dynamic-Link Library Executable routines that are stored as separate files with DLL extensions and executed only when needed by the program.

Host Port Interface Interface used to access the DSP memory.

IEC Connector Three-pin connector used on sockets that carry mains electricity to the computer. All PCs use a male IEC connector and mains lead with a female IEC connector.

Interrogation Pulse A signal transmitted by the coupler to activate the smart label's transponder.

Monitoring Port Parallel Port granting access to the HPI. It communicates directly with the Radio Processing Unit

Multi-Read See Anti-Collision

Nibble Half a byte (4 bits)

Packaged Reader A reader in its casing.

Phase Shift Difference of phase between the 13.56 MHz field emitted by two antennas. This feature is dedicated to rotating field applications and three-dimensional volume smart label detection.

Protocol A set of rules governing a particular function, such as the flow of data/information in a communication system (communication between a smart label and a reader or a reader and a PC or host computer).

Radio Frequency Identification System (RFID) An automatic identification and data capture system comprising one or more readers and one or more smart labels in which data transfer is achieved by means of suitable modulated inductive or radiating electromagnetic carriers.

Reader Electronic system for the communication between smart labels and host computers.

Reader Talks First Chip protocol for exchanges between the reader and the chip, whereby the chip waits for a command from the reader to which it responds.

RS-232 Electronic Industries Association (EIA) standard for serial interfaces between computers and peripherals which defines the function, the electrical characteristics and the timing of signals.

RS-485 Electronic Industries Association (EIA) standard for multipoint, differential data transmission. It allows multiple nodes to communicate bi-directionally over 1 or 2 twisted pairs.

Smart Label Small, flexible tag from the 13.56 MHz TAGSYS product line. A smart label is made of a chip connected to an etched antenna.

Tag See Smart Label.

Tag Talks First Chip protocol for exchanges between the reader and the chip, whereby the tag sends information continuously, without waiting for a specific command from the reader.

Transceiver A combined transmitter and receiver.

Transponder A combined receiver/transmitter that automatically transmits a signal when a 'trigger' is received by it. The trigger is often a pulse, called an interrogation pulse.

If you need assistance

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1 Introduction

1.1 General

This document provides information on how to install and use Medio P232/P233 Smart Label Readers.

1.2 Product Description

The TAGSYS Medio P232/P233 are mid range packaged RFID readers optimized to decode C210, C240, C270, C370, C370L, C370S and ISO15693 tags.

The Medio P232/P233 readers offer the following features on a small printed circuit board:

- A high-performance radio processing unit operating at 13.56 MHz.
- A digital processing unit that incorporates chip decoding drivers.

1.3 Operating Modes

The Medio P232/P233 have two operating modes:

- Standard mode

The reader is the slave of the master host system. It waits for a valid command from the host, performs the task and responds. This bi-directional communication is achieved via the STX-Enhanced 2 protocol. For more information, please refer to the **Medio P200u/s, P213, P232/3 Command Set** document.

- Stand-alone mode

The Reader is independent from the host system. Stand-alone mode is used by the P232/P233 readers to read tags and send their identification data to the host system. This transmission takes place in ASCII format. While in this mode, the reader cannot receive any commands. For more information, please refer to [Section 6, "Stand-alone Mode"](#).

1.4 Serial Communication Link

The P232/P233 readers are equipped with a TTL serial communication link.

1.5 Peripheral Devices

One input and one output can check or drive external peripherals.

The Input is compliant with TTL voltage levels (up to 5V).

The output is CMOS/TTL-compatible.

The I/O pins are mainly used for static applications such as reading sensors or driving LEDs, relays or buzzers. For more information, refer to [Section 7.1 "Using the Universal Input pin"](#) and [Section 7.2 "Using the Universal Output pin"](#). In stand-alone mode the input can be used to trigger the RF scanning and the output to display a successful reading. For more information, refer to [Section 6, "Stand-alone Mode"](#).

1.6 Key Features

Table 1: Medio P232/P233 Key Features

Description	Medio P232/P233
Operating Frequency	13.56 MHz
Compatibility	C210, C240, C270, C370, C370L, C370S and ISO15693 tags
Stand-alone Mode	C210, C240, C270, C370, C370L, C370S and ISO15693 tags
Primary Serial Link	TTL
Network Operation	No
TTL I/Os	1 input and 1 output
Firmware upgradeable	Yes

1.7 Delivery

The Medio P232 / P233 TAGSYS RFID Tag Reader batch contains the following items:

Table 2: Package Contents

Quantity	Item
Batch	Medio P232/P233TAGSYS RFID Tag Reader
1	CD-ROM including: <ul style="list-style-type: none"> • Medio P232/P233 User's Guide • Medio P200u/s, P213, P232/3 Command Set • User-friendly Px Explorer software provided for test and debug operations on Windows® 9x, NT®, 2000 , XP, Vista, Seven platforms • MedioSTX Software Development Kit for Win32 and WinCE platforms with documentation and sample code • Universal Software Development Kit for Win32 platforms with documentation and sample code
1	Welcome Letter / Product Return Form

2 Functional Overview

This section provides an overview of the architectural structure and peripheral devices of the Medio P232/P233 Smart Label Readers. It also provides a summary of the special functions used to drive the reader board and describes the automatic features managed by the Central Processing Unit (CPU).

2.1 Functional Block Diagram

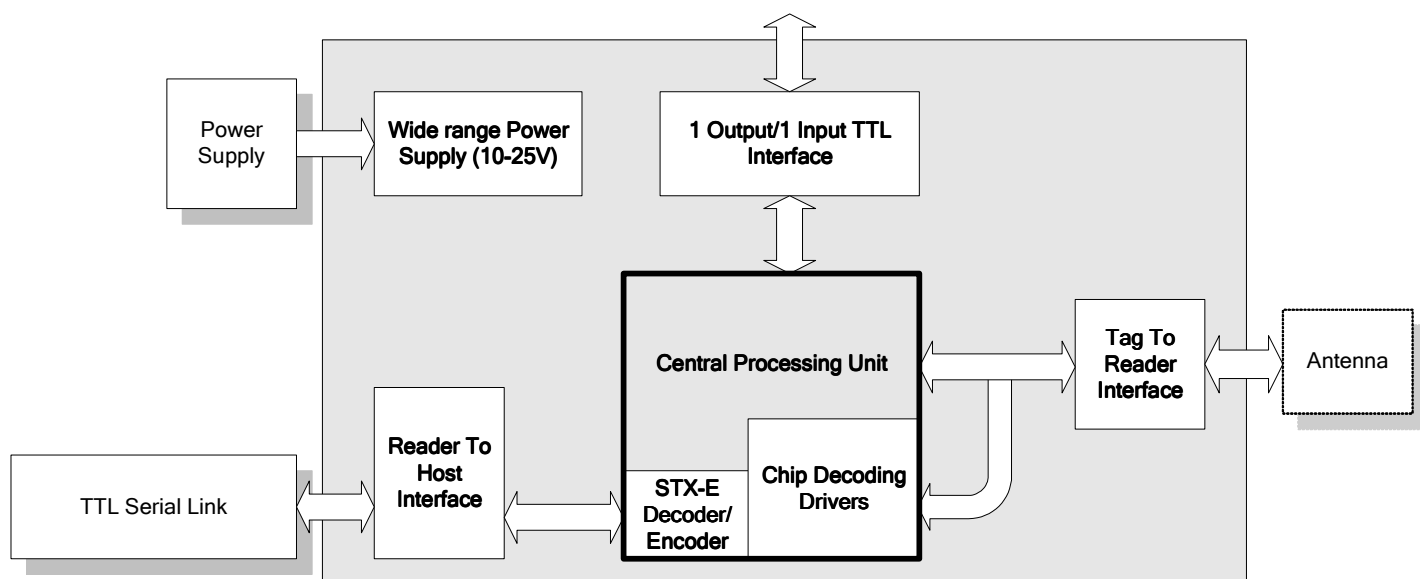
The Medio P232/P233 architectural structure is based on a CPU that drives all reader functions.

It manages communications between the host system (connected to the “Reader-to-Host interface”) and one or more smart labels using an antenna (connected to the “Tag-to-Reader interface”).

It also drives 1 Output and 1 Input that are CMOS/TTL.

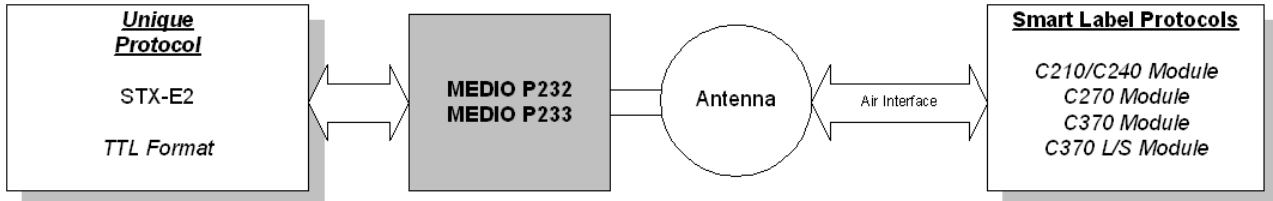
The following figure illustrates the general architecture of Medio P232/P233 Smart Label Readers.

Figure 1: Overall Medio P232/P233 Architecture



2.2 Communication Protocols

Figure 2: Medio P232/P233 Readers Communication Protocols



2.2.1 Tag-to-Reader Interface

To read from smart labels, to write to their memory, or to activate their functions, a wide command set is available. For a complete list of embedded commands and their description, please refer to the **Medio P200u/s, P213, P232/3 Command Set** document.

Each range of smart labels has its own specific set of commands.

Table 3: Smart Label Dedicated Commands

Smart Label Family	Available Commands	Comments
C210	Read UID	
C240	Read Pages	
	Set Password	
	Write Page	
C270	Anticollision Select	
	Selected Read	
	Write Block	
	Halt	
	Reset Quiet	
	Unselected Read	
ISO15693	ISO 15693 Inventory	Implements the whole recursive algorithm described in the Part-3 of ISO 15693 specification, Inventory Process
	ISO15693 Raw Request	

2.2.2 Reader-to-Host Interface

When the Medio P232/P233 readers are connected to an antenna, they act more as a protocol converter due to the wide range of tasks they can perform. For more information about these tasks, refer to the **Medio P200u/s, P213, P232/3 Command Set** document.

Depending on the task requested by the user through the host interface, the reader retrieves information from the smart label or provides it with information using its own communication protocol. The reader then converts the result of the operation into STXE-2 protocol and returns the information to the host via the Reader-to-Host interface. For more information, refer to the **Medio P200u/s, P213, P232/3 Command Set** document.

The Reader-to-Host interface is the slave of the master host system. It waits for a valid command from the host, performs the task and responds. This bi-directional communication is achieved via the STX-Enhanced 2 protocol. (For more information, please refer to the **Medio P200u/s, P213, P232/3 Command Set** document.)

2.3 Peripheral Devices

One input and one output can check or drive external peripherals.

The Input is compliant with TTL/CMOS voltage.

The output interface manages one pin that drives an external peripheral. Outputs consist of a full CMOS driver that can drive up to 20 mA (sunk or sourced).

The I/O pins are mainly used for static applications such as reading sensors or driving LEDs, relays or buzzers. For more information, refer to [Section 7.1 “Using the Universal Input pin”](#) and [Section 7.2 “Using the Universal Output pin”](#). In stand-alone mode the input can be used to trigger the RF scanning and the output to display a successful reading. For more information, refer to [Section 6, “Stand-alone Mode”](#).

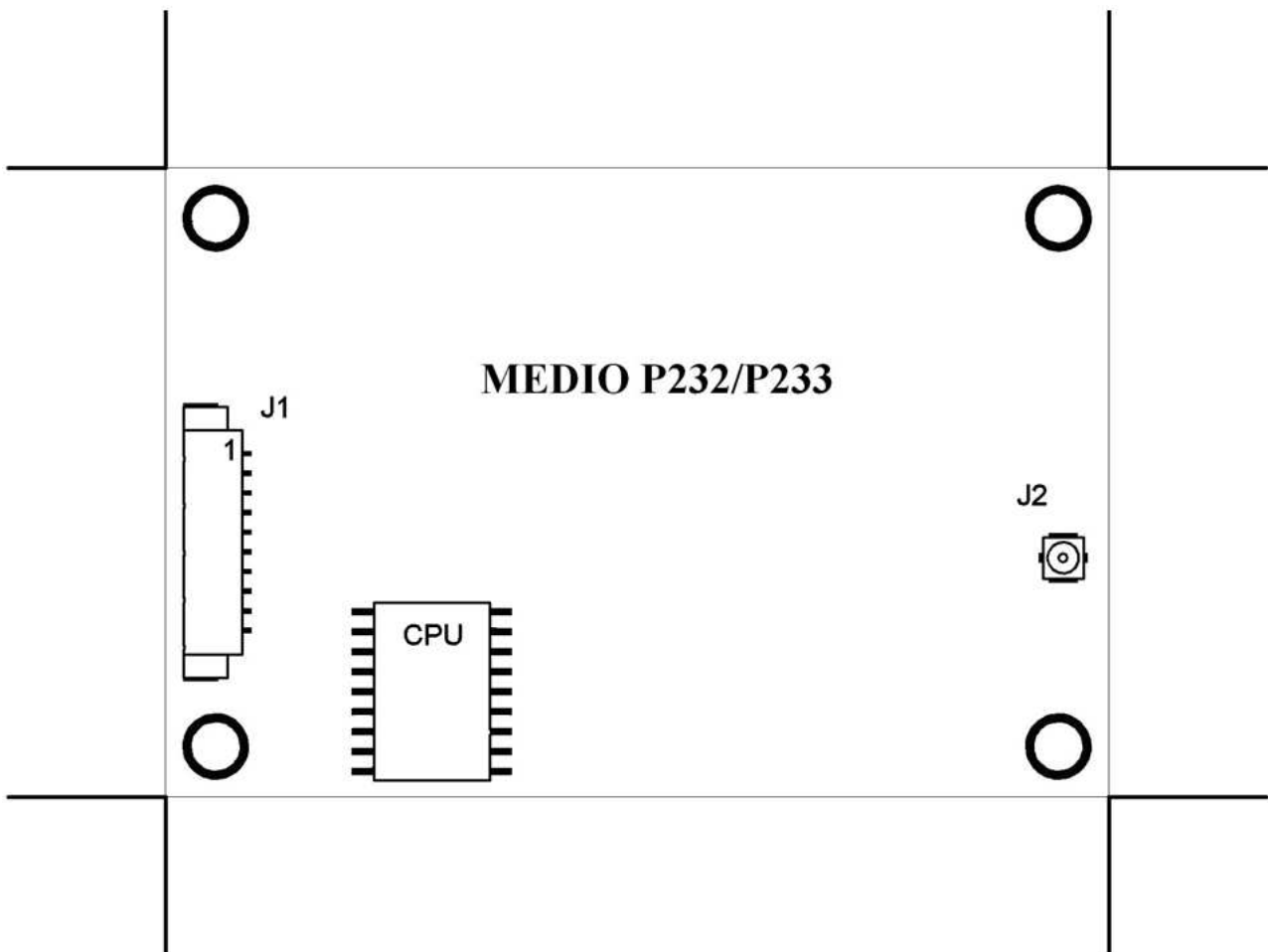
3 Installing the Reader

This section explains how best to install the Medio P232/P233 Smart Label readers' boards. The physical description of the readers boards are given in [Section 9, "Mechanical characteristics"](#).

3.1 Pin Connections

The Medio P232/P233 Smart Label readers' boards have two connectors with outputs to the various peripheral devices, as illustrated:

Figure 3: Connector Locations

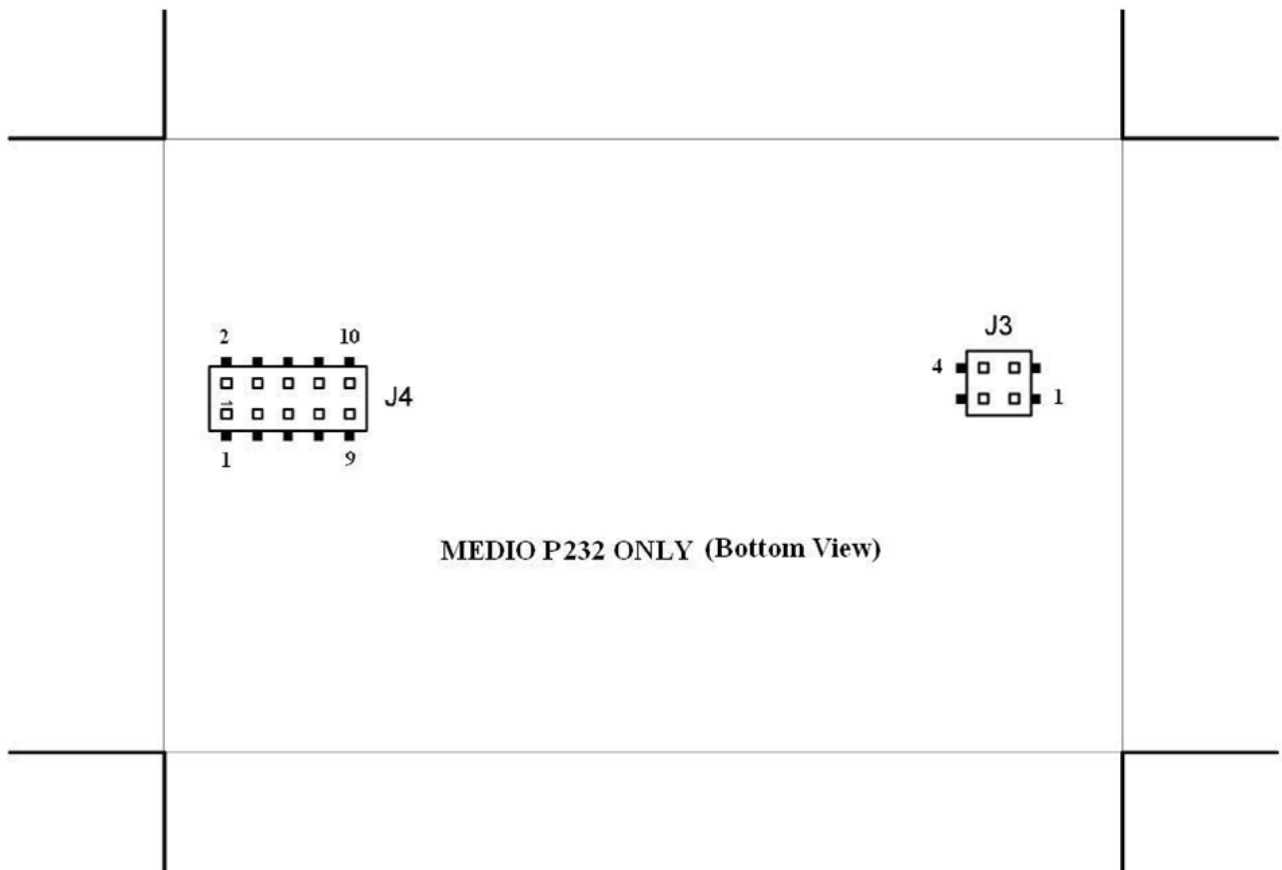


J1 is a 10 pins MOLEX™ connector type, reference part 53398-1090. Associated receptacle is 51021-1000 (with 50079 female Terminals).

J2 is dedicated to plug the antenna cable.

The Medio P232 Smart Label reader board has two more connectors as illustrated:

Figure 4 : Connectors locations (bottom view), only P232



J4 is a 10 pins, 2.00mm Pitch Milli-Grid™ Receptacle, Surface Mount connector type. MOLEX™ reference part is 0791091004. Associated receptacle is TMM-105-05-L-D-SM (SAMTEC reference).

J3 is a 4 pins, 2.00mm Pitch Milli-Grid™ Receptacle, Surface Mount connector type. MOLEX™ reference part is 0791091001. Associated receptacle is TMM-102-05-L-D-SM (SAMTEC reference).

The following table lists the pins associated with each peripheral device.

Table 4: Pin Descriptions

Pin	Description	Connector
Power Supply		
VCC	Supply Voltage	J1-1, J4-1
Communication Links to the Host System		
RX_TTL	Receive pin for TTL	J1-4, J4-3
TX_TTL	Transmit pin for TTL	J1-5, J4-5
Antenna		
ANT	Antenna output pin	J2, J3-1 or J3-3
I/O Interface		
Input		J1-7, J4-6
Output		J1-10, J4-10
Ground Voltage Reference		
GND	Ground (for power supply)	J1-2, J4-2
GND	Ground	J1-3, J4-9
GND	Ground (for antenna)	J3-2, J3-4
Reserved Pins		
NC	Do not connect	J1-6, J4-4
NC		J1-8, J4-7
NC		J1-9, J4-8



Reserved pins are used for any CPU firmware upgrade. While updating firmware, Input is also used for programming.

3.2 Power Supply

The power supply must be connected to a GND pin and to the V_{CC} pin. It must be able to withstand a peak current of 600 mA when the reader is powered on. Please refer to [Section 10, “Electrical characteristics”](#) for more details about reader consumption.

The V_{CC} pin accepts an input voltage between 10 and 25 V.

3.3 Antenna

The J2 connector is dedicated to an antenna that is required for reading smart labels. It is recommended to use a TAGSYS antenna.

A coaxial cable (50 Ω impedance) as short as possible should be used.

4 Serial Communication Links

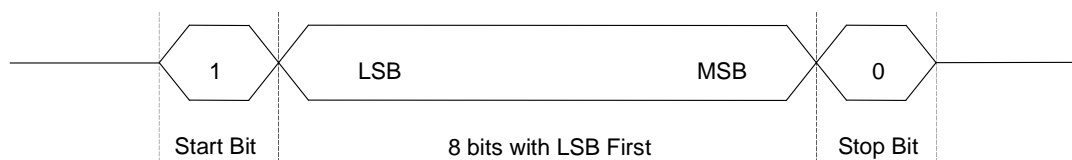
Medio P232/P233 Smart Label Readers are based on a Master-Slave communication system where the host system acts as the master and the reader as the slave.

The Host-to-Reader interface accepts TTL levels communication links.

4.1 General Information on Data Acquisition

Communication takes place by sending frames (bytes) on the communication link. The bytes are transmitted LSB first with one start bit and one stop bit as shown in the following figure.

Figure 5: Structure of a Byte on the Communication Link



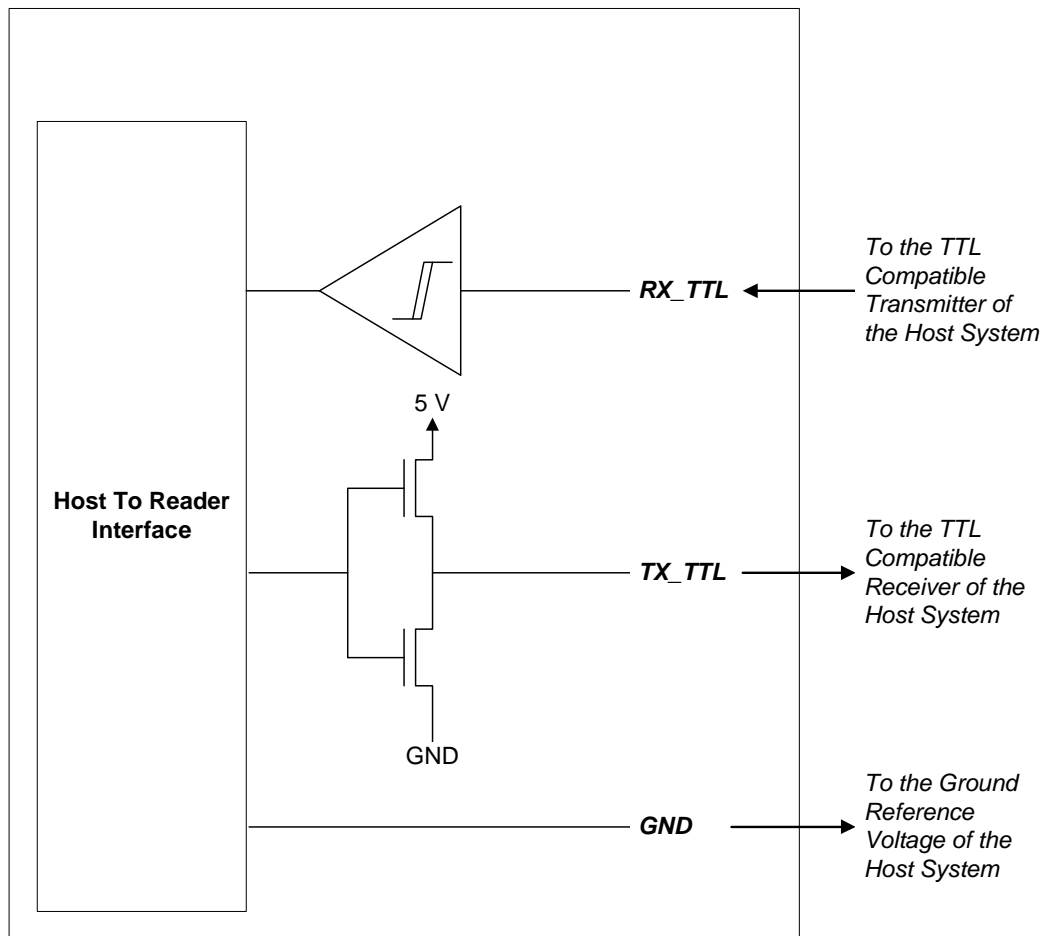
Communication parameters are listed in the following table. These parameters cannot be modified.

Table 5: Parameters for the Transmission of a Byte

Parameter	Value
Allowed Baud Rates	4800, 9600, 19200, 38400, 57600, 115200 (depending on the reader settings)
Start Bit	On
Number of data bits	8
Parity	None
Stop bit	1

The transmission timeout between two bytes is 10 ms.

The default Medio P232/P233 configuration is 38400 bps.

Figure 6: TTL Serial Link Hardware Interface

Refer to Table 5 and make sure you source and sink current according to parameters described.

Rx Pin does have a weak Pull Up: Do not attempt to drive it with an open drain component as it is not a reliable and reproducible way to implement it.

4.1.1 Installing the TTL Interface

To use the TTL Interface, pins TX_TTL and RX_TTL must be connected respectively to Transmit and Receive pins of the TTL-compatible communication link of the host system.

The RX_TTL pin is compatible with TTL/CMOS levels. It needs to be driven by a full CMOS output driver.

The TX_TTL pin is a full CMOS output driver.

4.1.2 Electrical Signal Requirements

Both RX_TTL and TX_TTL pins have an inactive, high-level voltage. During the transmission of a byte, a bit set to 1 is coded by a low voltage and a bit set to 0 by a high one.

Figure 7: TTL Signal during an Exchange

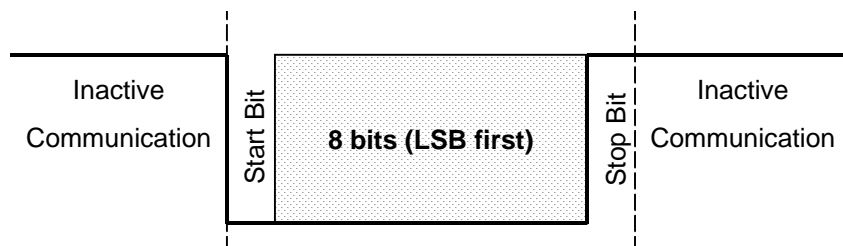


Table 6: TTL Interface Pins - Electrical Characteristics

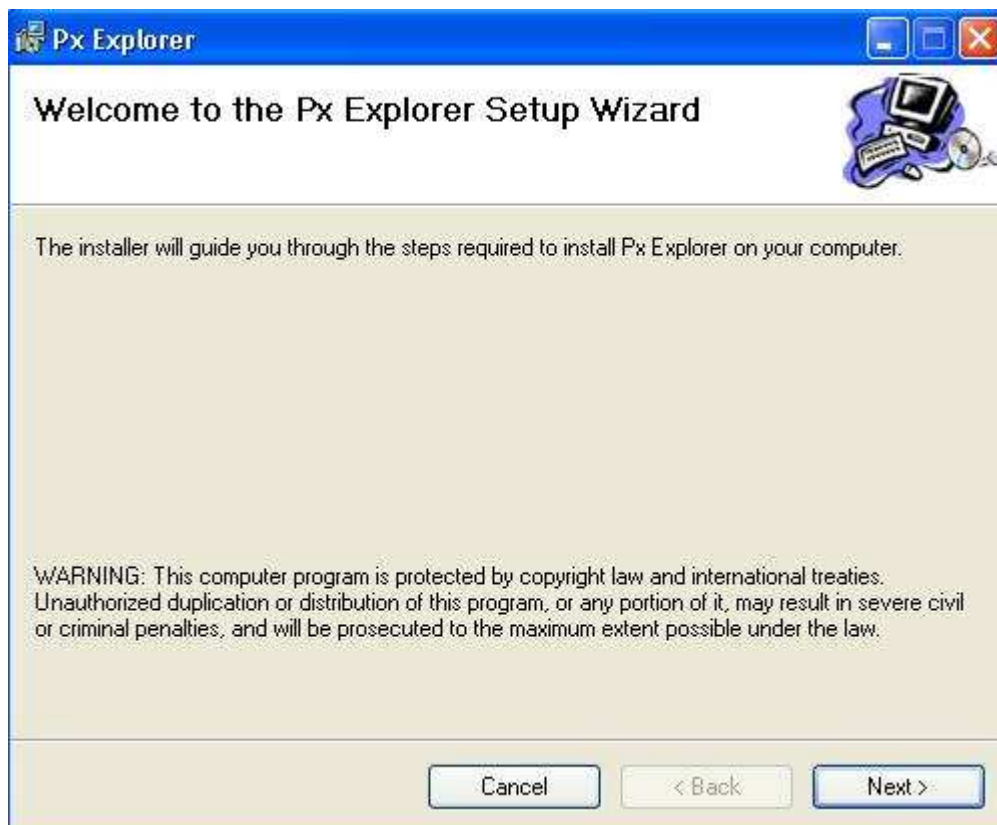
Parameters	Min.	Typ.	Max.	Unit	Note
RX_TTL Input Voltage Low	0		1	V	
RX_TTL Input Voltage High	4	5		V	
RX_TTL Input Current	1			μA	
TX_TTL Output Voltage Low			0.6	V	
TX_TTL Output Voltage High	4.3			V	
TX_TTL Output Current			20	mA	Sunk or Sourced
TX_TTL Output Capacitance			50	pF	

5 Px Explorer

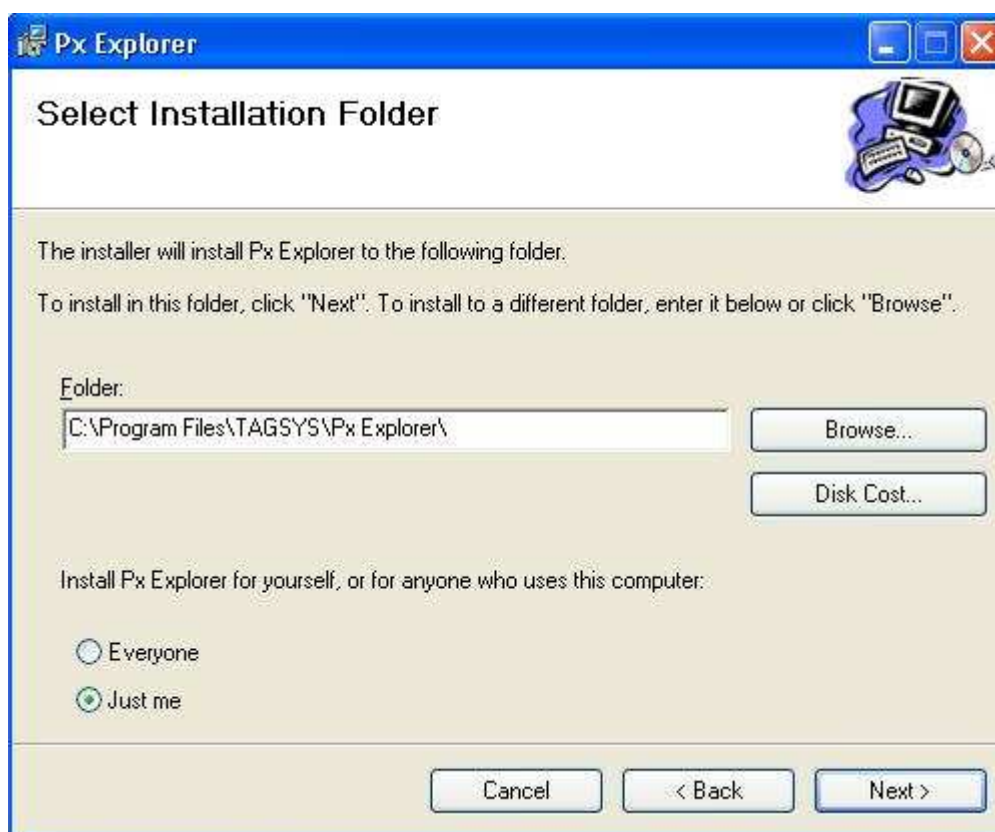
The Medio P232/P233 readers are delivered with the Px Explorer software tool intended to easily setup the reader, test it and perform reading and writing operations according to the antenna and type of tag to be used. In addition, Px Explorer can display additional information such as the Product Reference, Firmware version and revision. This section describes how to start with Px Explorer.

5.1 Installing Px Explorer

To install Px Explorer software, insert the product CD-ROM into the disk drive on your PC and run the Setup from the Software\Px Explorer folder and click “Next”



Click the “Browse” button if you want to choose a specific installation folder.



Once the correct folder is selected, click "Next"



Click "Next" to start the installation process. A shortcut will be created on your desktop and a program group will be created in the start menu.

5.2 Running Px Explorer

Before running Px Explorer you have to know which COM port number is assigned to the TAGSYS Medio P232/P233 reader.

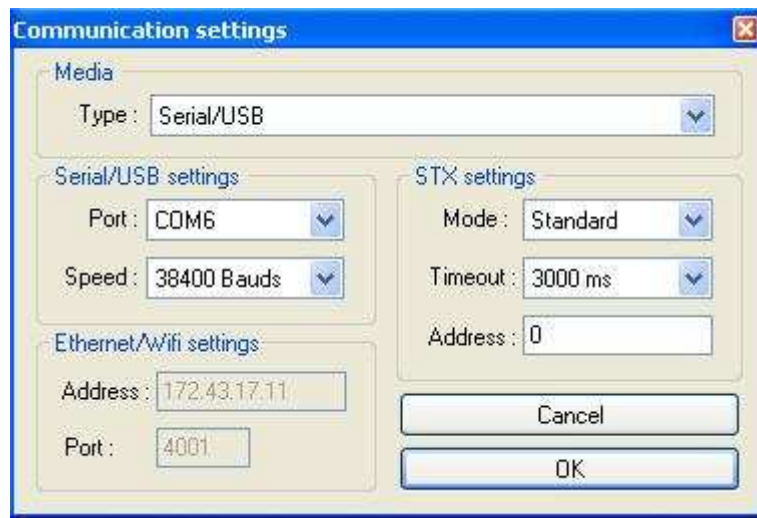


To connect the Medio P232/P233 to a PC don't forget to use a RS232/TTL serial converter.

Power up the Medio P232/P233 and connect it to a PC. Run Px Explorer. If the following window is displayed click yes.



Open the Communication Settings window (CTRL+C) and check the COM port number and the communication speed. The default communication speed for the Medio P232/P233 is 38400 Bauds.



Click OK. Now Px Explorer is ready to communicate with your Medio P232/P233

5.3 Reading and Writing a Tag

Px Explorer includes a Wizard function used to guide you each step of how to read or program a tag. We recommend using the Wizard function for users who are not familiar with all Px Explorer capabilities and features.

Click on the Wizard icon (magic wand) to open the Px Explorer Wizard dialog box.



Select the type of chip from the drop-down menu or place the tag on the antenna and click the "Detect" button to automatically detect the tag type.

Select the desired operation (Read or Write) and then click OK. All the necessary windows to perform the desired action will be automatically displayed on the screen.

For more details concerning Px Explorer select the info menu and click Help (CTRL+H) to display the Px Explorer User's Guide

6 Stand-alone Mode

Stand-alone Mode is designed to use the reader without using any command set. While in this mode, the reader is limited to tag reading.

The reader sends the tag ID to the Host System using ASCII protocol via the Reader-to-Host interface.

ASCII protocol is used in order to provide hexadecimal data that can be read by a variety of terminal programs (e.g. Microsoft® HyperTerminal).

6.1 Stand-alone Mode Features

Table 7 lists the available Stand-alone mode features.

Table 7: Available Features in Stand-alone Mode

Features	Medio P232/P233
Customized tag type reading	C210 C240 C270 ISO15693
Serial Communication Type	RS-232 RS-422
Baud Rate	4800, 9600, 19200, 38400, 57600, 115200 bps
Repetition Option	Available
Customized ASCII message format	STX/ETX Characters Header String Chip Description String ID String (variable length) End of Message String
Input Trigger	Available
Output for active trigger information	Available
Output for tag reading information	Available

6.1.1 Customized ASCII Message Format

When a tag is read, its data are transmitted to the host in the form of an ASCII character frame.

Table 8: Customized ASCII Message Format (TAGSYS RFID Tag is read)

	Start of Text	Header String	Chip Description String	ID		End of Message String	End of Text
Description	<STX> (0x02)	"TAGSYS-" (Default)	Chip name			<CR/LF> (Default)	<ETX> (0x03)
Size	1 character	0 to 16 characters	0 to 16 characters	C210	2 to 16 characters	0 to 16 characters	1 character
				C240	2 to 16 characters		
				C270	2 to 16 characters		
				ISO15693	2 to 16 characters		
P232/P233	Optional	Optional	Optional	Required		Optional	Optional

P232/P233 readers can decode all chips in Stand-alone mode. Only the ID field is retrieved in the return ASCII message. All other fields are optional. The ID field length is programmable; the default lengths are given in [Table 9](#).

Table 9: Default ID Field Lengths

Chip Type	Default ID Field Length
C210 chip	16 (Total memory)
C240 chip	16 (Block 0 Page 0)
C270 chip	16 (Block 0 and Block 1)
ISO15693 chip	16 (UID)

6.1.2 Repetition Option

The reader constantly attempts to read any chips present in the field. When a chip ID is detected, the reader can send the information to the host in one of 2 modes:

1. In "Repeated Read" mode, the reader returns a chip's ID to the host with each successful read operation.
2. In "Read Once" mode, the reader only returns the ID of a chip if the previous read corresponds to a different chip, or if all reading attempts have failed 4 times (this feature makes it possible to detect a chip's potential exit out of the field).

6.1.3 Trigger Input

When the trigger capability is enabled, a trigger state is used to start and stop the RF scanning. The trigger is connected to the input of the reader.

Depending on the reply settings of the trigger, the ASCII message can be sent during the trigger activity (Repeated Read mode and Read Once mode are available) or at the end of the trigger. In this last case, a message is always sent to the host system:

- ♣ if a tag has been read, the message contains its ID,

- ♣ if a tag has not been read, the message contains a No Message string (that can be defined) as shown in [Table 10](#).

Table 10: Customized ASCII Message Format (TAGSYS RFID Tag is not read)

	Start of Text	Header String	No Tag Found String	End of Message String	End of Text
Description	<STX> (0x02)	"TAGSYS-" (Default)	"???????" (Default)	<CR/LF> (Default)	<ETX> (0x03)
Size	1 character	0 to 16 characters	0 to 16 characters	0 to 16 characters	1 character
P232/P233	Optional	Optional	Required	Optional	Optional

6.1.4 Output Settings

The output of the reader can be used to monitor the trigger activity or the successful reads.

6.2 Stand-alone Mode Settings

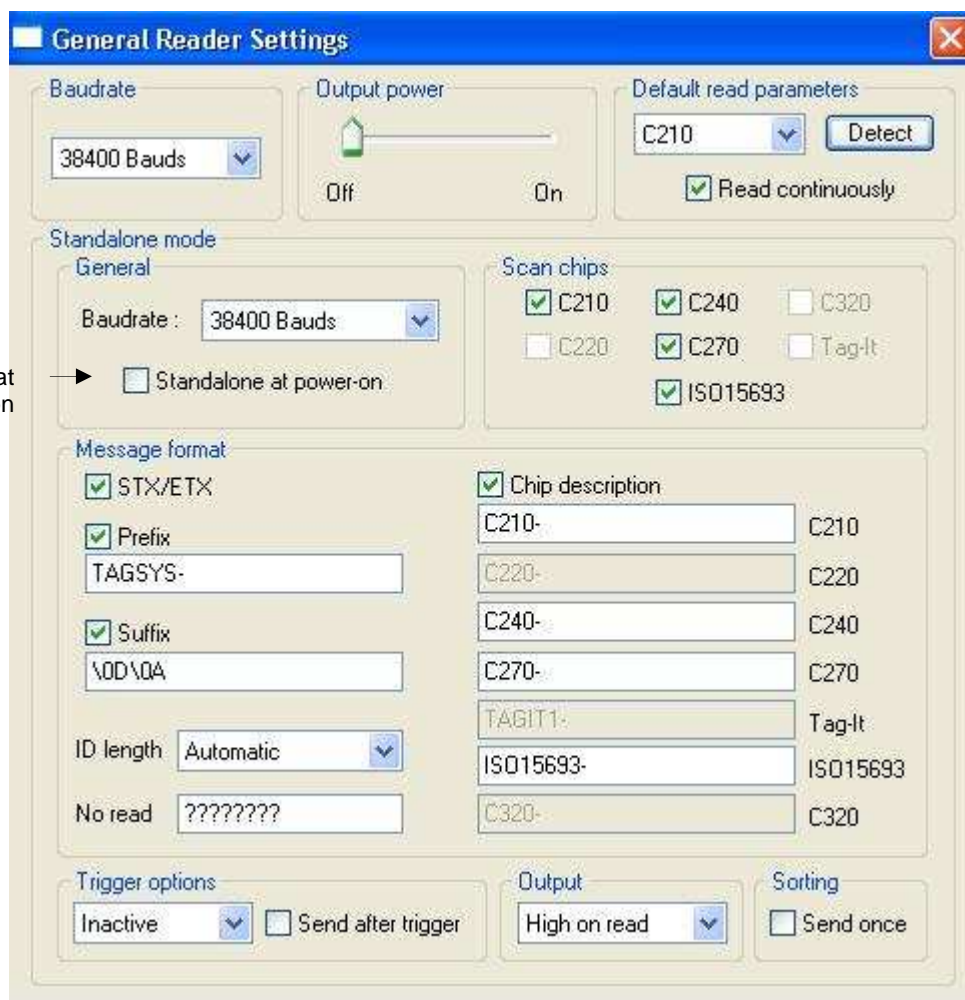
Stand-alone Mode can be set in one of two ways while the reader is in Normal Operating mode

- By using the Px Explorer software provided with the reader
- By using "Set Stand-alone Mode" command followed by a "Reset Reader" command. For more information, refer to the **Medio P200u/s, P213, P232/3 Command Set** document.

6.2.1 Using Px Explorer

Run the Px Explorer software. In the Settings menu, select General Reader Settings

Enable Standalone mode at next power on



6.3 Disabling Stand-alone Mode

The Medio P232/P233 can be reset in Standard mode in one of two ways as described below:

- Use the Px Explorer software provided with the reader and click Yes when the following window is displayed



- Send the 'S' character using a console interface (for example, HyperTerminal).

7 Connecting Peripheral Devices

7.1 Using Input Pin

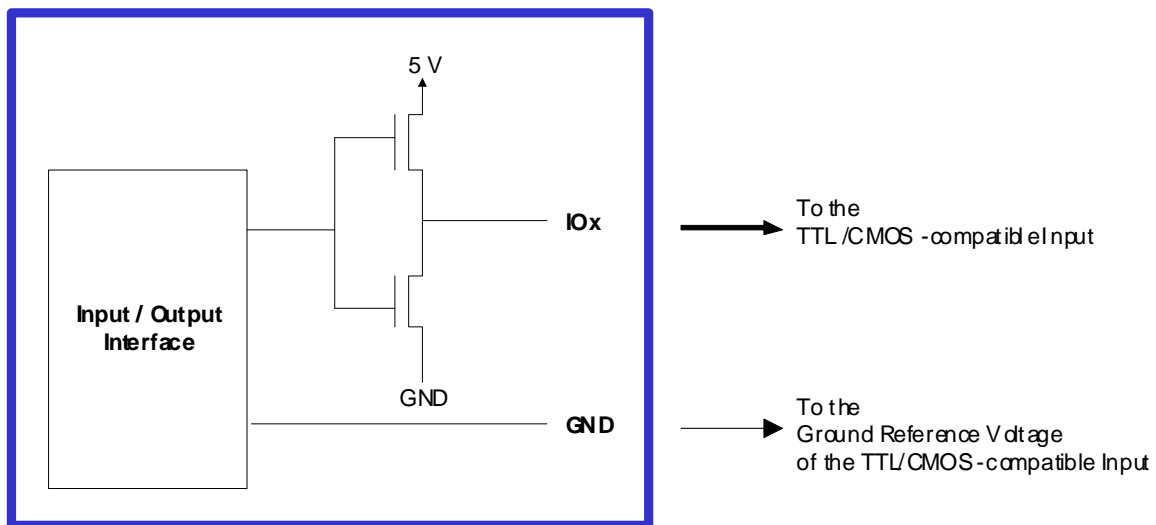
The reader input can be driven by a voltage source from 0V up to 5V referring to the input ground. A relay (open chain transistor, switch...) can also be used to connect the input pin and its ground.

- Low level input voltage is defined to be in the range of 0 to 1V
- High level input voltage is defined to be in the range of 4 to 5V

7.2 Using Output Pin

Each output pin voltage is compatible with the TTL/CMOS level and is driven by a full CMOS output driver.

Figure 8: Hardware Interface with Outputs



7.3 Connecting an LED or a Buzzer to an Output

An LED or a buzzer can be triggered thanks to an output pin. This operation is executed by the host system application.



An external serial resistor is needed for this connection if the current must be limited.

7.4 I/O Electrical Signal Requirements

The following table provides the electrical DC characteristics.

Table 11: I/O Interface Pins - Electrical Characteristics

Parameters	Conditions	Min.	Typ.	Max.	Unit	Note
Output Voltage Low				0.6	V	
Output Voltage High		4.3			V	
Output Current				20	mA	Sunk or sourced
Output Capacitance				50	pF	
Input Voltage Low				0.2VDD	V	VDD = 4.5 to 5.5V
Input Voltage High				0.8VDD	V	VDD = 4.5 to 5.5V

7.5 Reserved Pins



These pins must NOT be connected or unpredictable results may occur.

8 Technical Specifications

8.1 Medio P233 Technical Specifications

Table 12: Medio P233 Technical Specifications

Reference	Medio P233
Size (L x W x H)	40 x 60 x 7 mm
Weight	13 g
DC power	9 to 25 V
Chip compatibility	C210 C240 C270 C370/C370L-S ISO15693
Communication interface	TTL
RF Output Power	1 W
Operating temperature	0°to +85°C
Storage temperature	-20°to +85°C
Mechanical fixation	Mechanical fixation with 4 screws (3 mm)
Connection mechanisms	MOLEX™ (533988-1090 header, 51021-1000 receptacle, 50079 female terminals) for supply and control signals UFL connector type for antenna
Communication protocol in Standard mode	TAGSYS-specific STXE-2

8.2 Medio P232 Technical Specifications

Table 13: Medio P232 Technical Specifications

Reference	Medio P232
Size (L x W x H)	40 x 60 x 11.7 mm
Weight	14 g
DC power	9 to 25 V
Chip compatibility	C210 C240 C270 C370/C370L-S ISO15693
Communication interface	TTL
RF Output Power	1 W
Operating temperature	0°to +85°C
Storage temperature	-20°to +85°C
Mechanical fixation	Mechanical fixation with 4 screws (3 mm)
Connection mechanisms	MOLEX TM (533988-1090 header, 51021-1000 receptacle, 50079 female terminals) for supply and control signals MOLEX TM (0791091004 header) and SAMTEC (TMM-105-05-L-D-SM receptacle) for supply and control signals UFL connector type for antenna MOLEX TM (0791091001 header) and SAMTEC (TMM-102-05-L-D-SM receptacle) for antenna
Communication protocol in Standard mode	TAGSYS-specific STXE-2

9 Mechanical Characteristics

9.1 Dimensions and General Mechanical Information

Figure 9: Medio P233: Mechanical Dimensions (Side View)

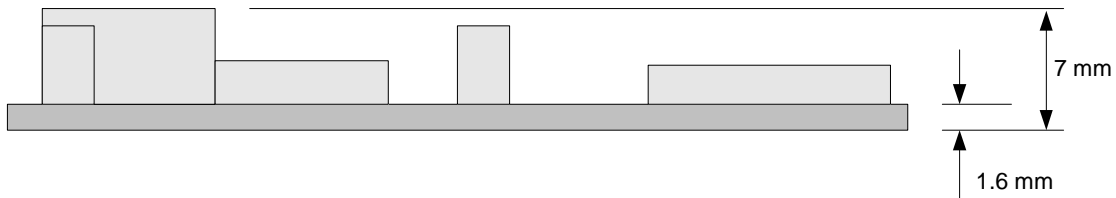


Figure 10: Medio P232: Mechanical Dimensions (Side View)

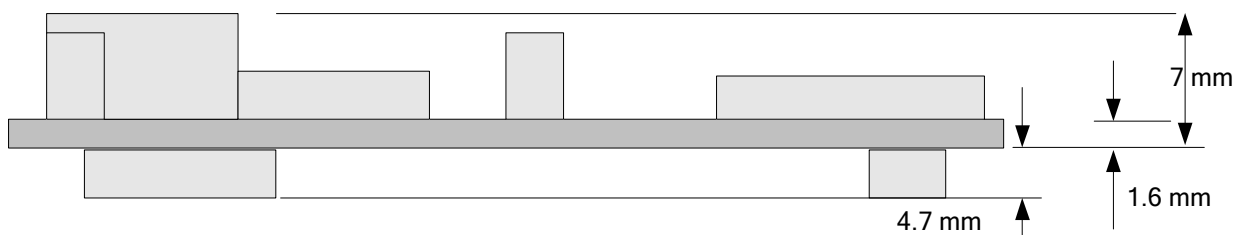
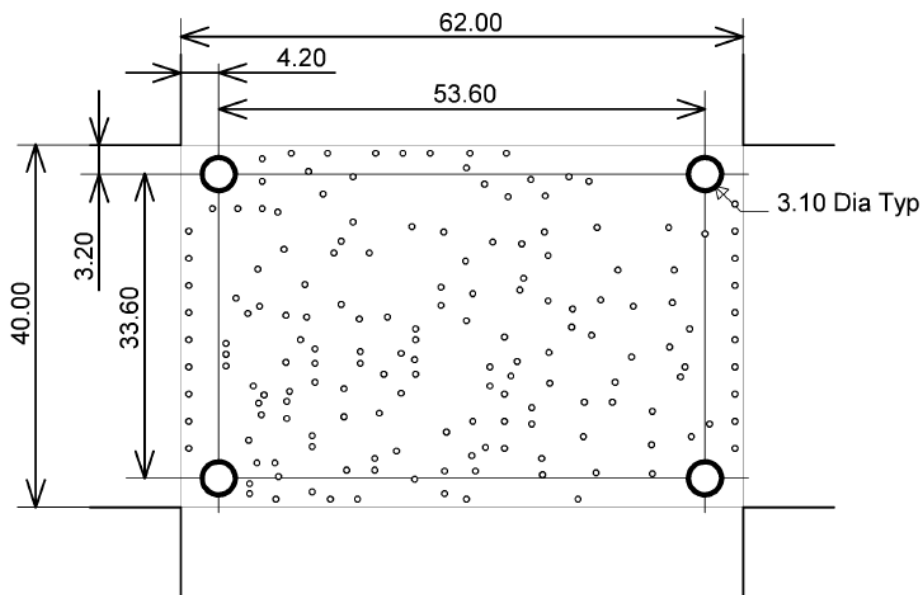
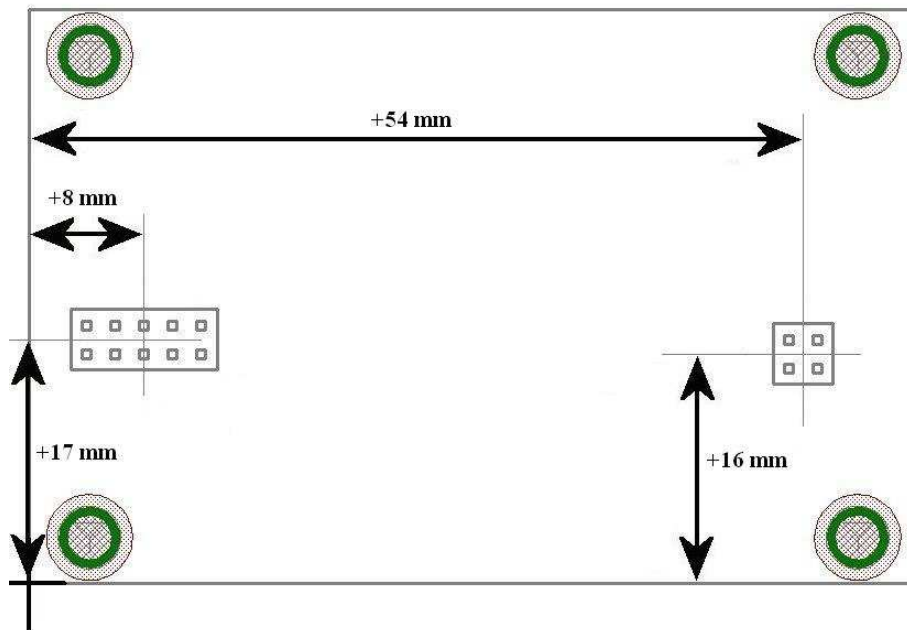


Figure 11: Medio P232/P233 Coupler: Mechanical Dimensions (Top View)



The values given for dimensions are in millimeters and have a tolerance of 0.2 mm.
Fixation holes are metallic. Their diameter is 3.1 mm.

Figure 12: Medio P232: Mechanical Dimensions (Top View of the reader)



By transparency we can see the connectors located on the bottom side.

9.2 Markings

The firmware application programmed in the reader and its version number are indicated on an adhesive strip on the processor unit of the reader.

10 Electrical Characteristics

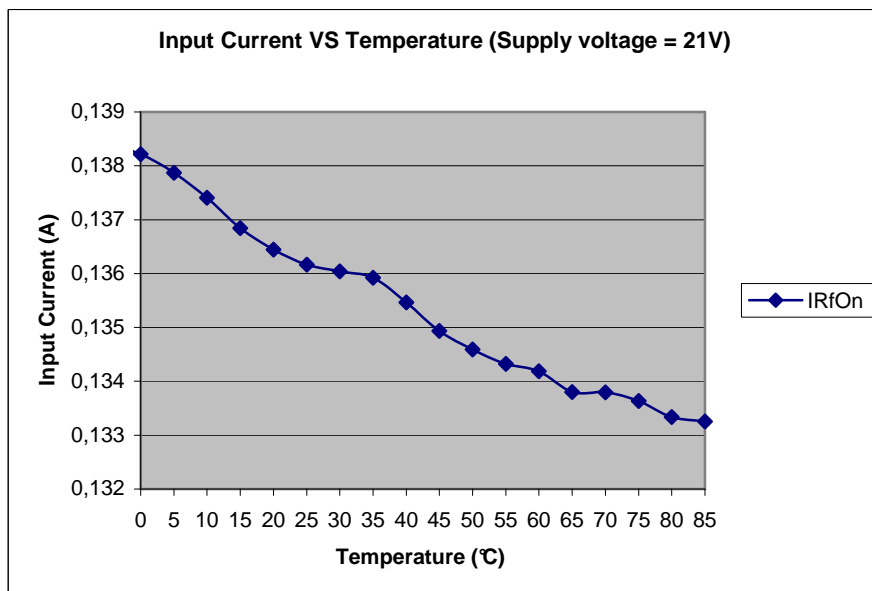
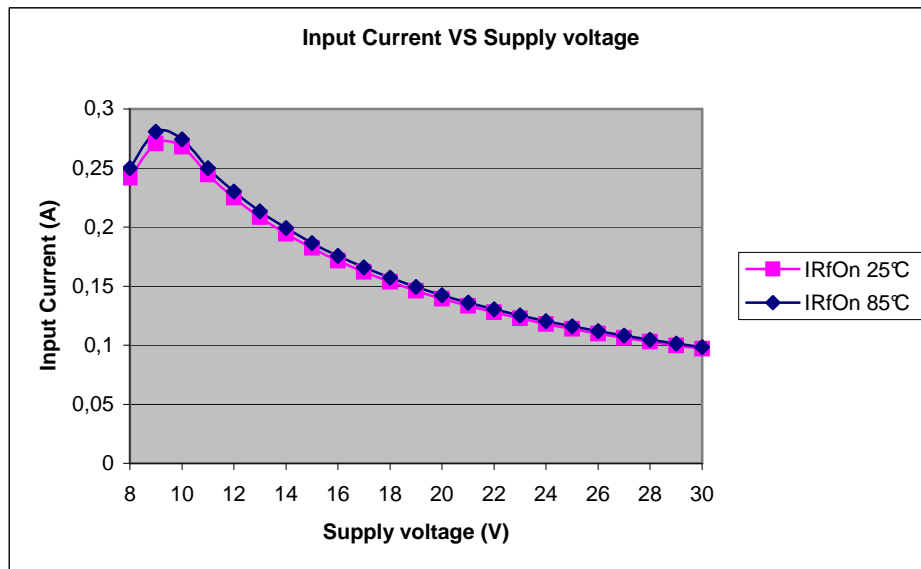
This chapter provides information about AC and DC and characteristics for all pins. It also gives timing characteristics for the different interfaces.

10.1 Absolute Maximum Ratings

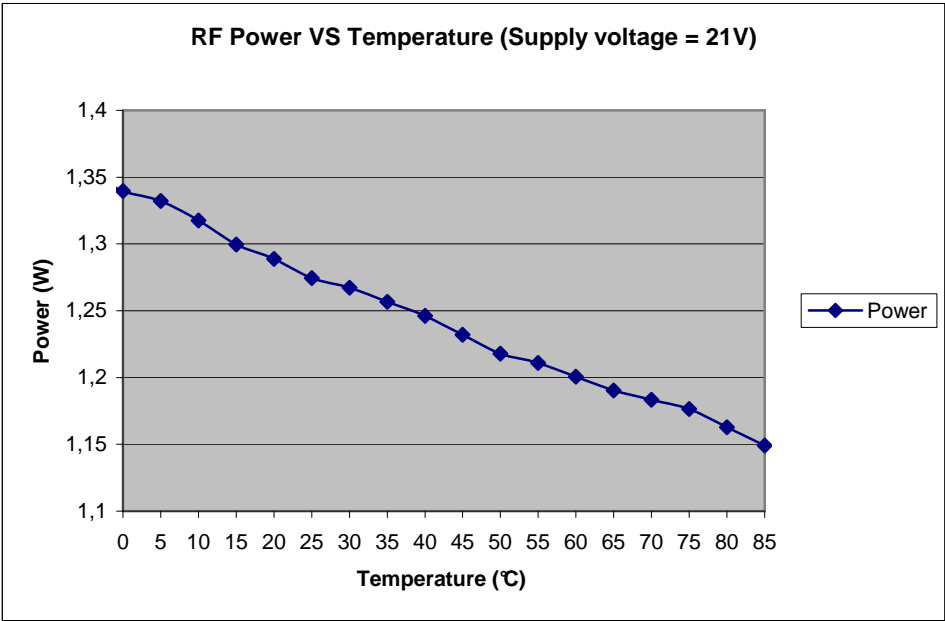
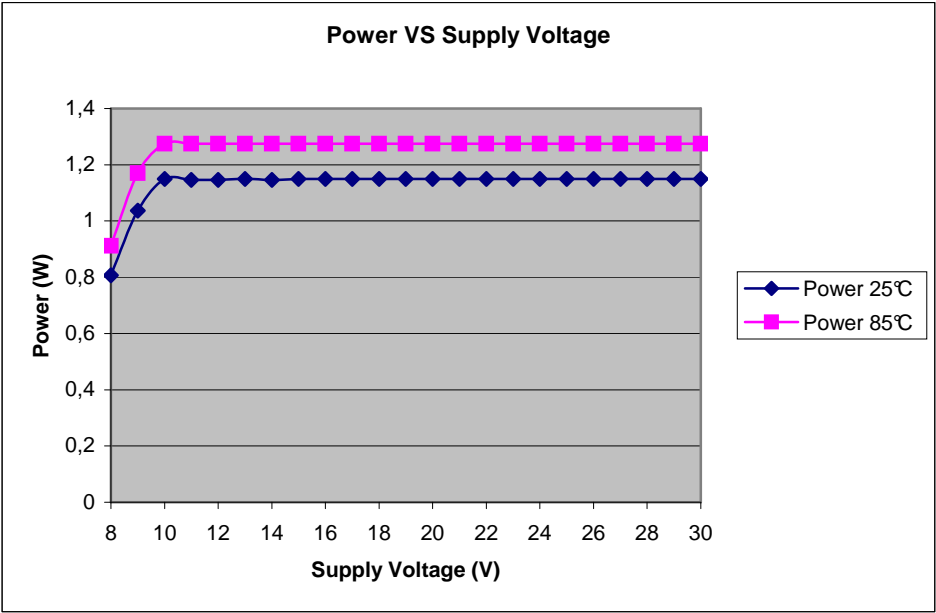
Parameter	Value
Ambient Operating Temperature	0°C to +85°C
Storage Temperature	-20°C to +85°C
Supply Voltage (VCC pin) with respect to GND	30 V
Total Power Dissipation	1.4 W
Total Power Dissipation on Antenna (ANT pin)	1 W
DC Current Allowed on VCC Pin	400 mA
Peak Current Allowed on VCC Pin	800 mA
Output Current Sunk by outputs and TX_TTL pins	20 mA
Output Current Sourced by outputs and TX_TTL pins	20 mA

10.2 Power Supply DC Characteristics

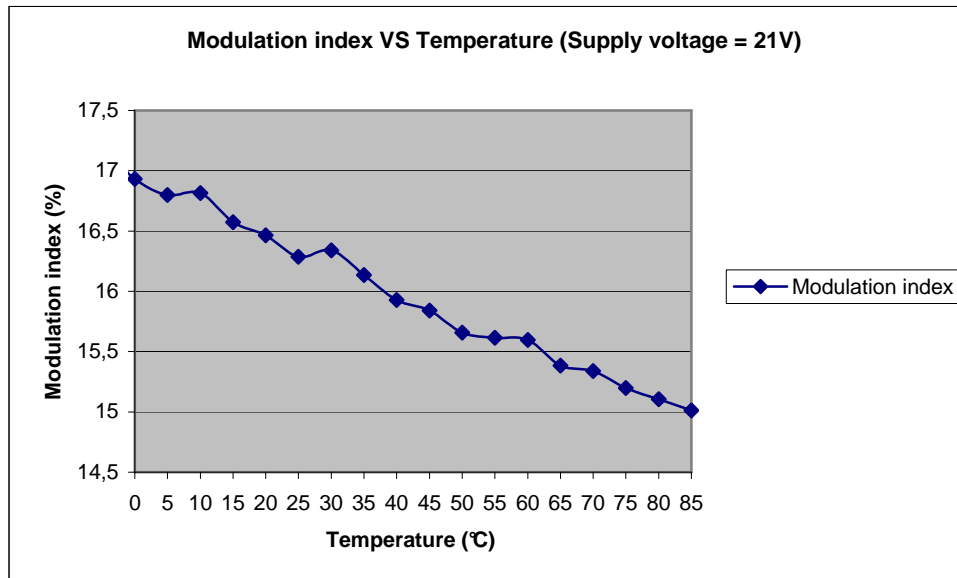
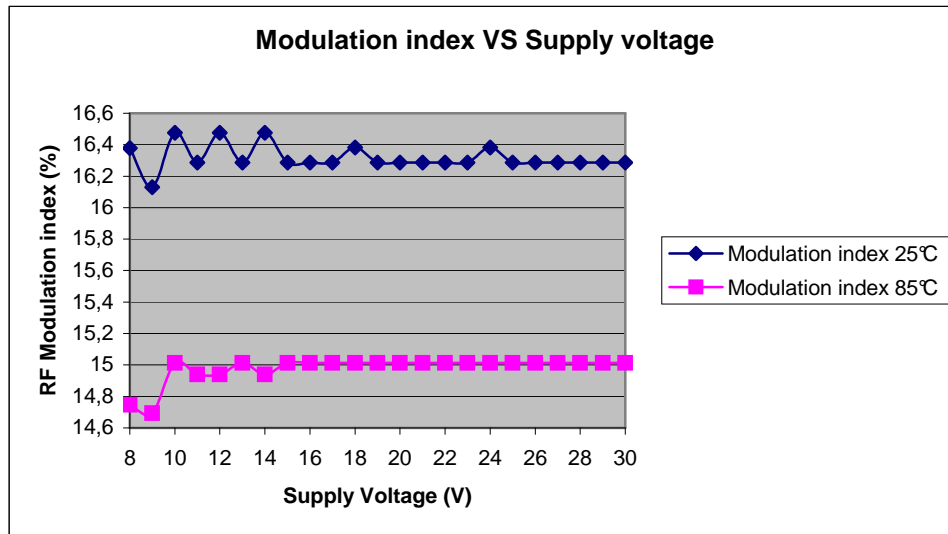
Typical Input Current (from supply)



RF Power



RF Modulation Index



11 Warranty Conditions

11.1 Warranty

TAGSYS warrants that its Medio P03X shall comply with the functional specifications set forth herein for a period of one year from the date of delivery to the Buyer.

This warranty is valid for the original Buyer of the Product and is not assignable or transferable to any other party.

TAGSYS cannot be responsible in any way for, and disclaims any liability in connection with the operation or performance of:

- ♣ Any product in which the Product is incorporated;
- ♣ Any equipment not supplied by TAGSYS which is attached to or used in connection with the Product; or,
- ♣ The Product with any equipment.

This warranty only applies to the Product and excludes all other equipment.

Optimal operation and performance of the Product are obtained by using TAGSYS' readers, by applying TAGSYS installation guidelines and by having your installation reviewed by a CIT (Certified Integrator by TAGSYS) technical consultant.

The TAGSYS warranty does not cover the installation, maintenance or service of the Product and is strictly limited to the replacement of Products considered as defective by TAGSYS and returned according to the return procedure defined below; in such case, TAGSYS will, at TAGSYS' option, either replace every defective Product by a new one, repair it or refund the purchase price paid by Buyer to TAGSYS for the defective Product.

11.2 Warranty Exclusions

- ♣ Defects or damages resulting from storage of the Product under conditions which do not comply with TAGSYS specifications or normal usage
- ♣ Defects or damages resulting from use of the Product in abnormal conditions (abnormal conditions being defined as any conditions exceeding the ones stated in the product specifications).
- ♣ Defects or damages from misuse, accident or neglect.
- ♣ Defects from improper testing, operation, maintenance or installation.
- ♣ Defects from alteration, modification except modifications or adjustments specifically described in this Product reference guide, adjustment or repair, or any attempt to do any of the foregoing, by anyone other than TAGSYS.
- ♣ Any action on Product that prevents TAGSYS from performing an inspection and test of the Product in case of a warranty claim.
- ♣ Tampering with or abuse of the Product.
- ♣ Any use or incorporation by the Buyer or a third party of TAGSYS' Product into life saving or life support devices or systems, or any related products; TAGSYS expressly excludes any liability for such use.

11.2.1 General Provisions

This warranty sets forth the full extent of TAGSYS responsibility regarding the Product.

In any event, TAGSYS warranty is strictly limited to (at TAGSYS' sole option) the replacement, the repair or refund of the Products purchase price to TAGSYS, of Products considered as defective by TAGSYS.

The remedy provided above is in lieu and to the exclusion of all other remedies, obligations or liabilities on the part of TAGSYS for damages, whether in contract, tort or otherwise, and including but not limited to, damages for any defects in the Products or for any injury, damage, or loss resulting from such defects or from any work done in connection therewith or for consequential loss, whether based upon lost goodwill, lost resale profits, impairment of other goods or arising from claims by third parties or otherwise.

TAGSYS disclaims any explicit warranty not provided herein and any implied warranty, guaranty or representation as to performance, quality and absence of hidden defects, and any remedy for breach of contract, which but for this provision, might arise by implication, operation of law, custom of trade or course of dealing, including implied warranties of merchantability and fitness for a particular purpose.



In all cases, specific warranty conditions as described in the sales contract will always prevail.

11.2.2 How to Return Defective Products

The Buyer shall notify TAGSYS of the defects within 15 working days after the defects are discovered.

Defective Products must be returned to TAGSYS after assignment by a TAGSYS Quality Department representative of an RMA (Return Material Authorization) number. No Products shall be returned without their proof of purchase and without the acceptance number relating to the return procedure.

All Products must be returned in their original packaging.

All Products shall be returned with a report from the Buyer stating the complete details of the alleged defect.

Call +33 (0) 4 42 18 89 36 for return authorization and shipping address.

If returned Products prove to be non-defective, a charge will be applied to cover TAGSYS' analysis cost and shipping costs.

If the warranty does not apply for returned Products (due to age, or application of a warranty exclusion clause), a quote for replacement will be issued, and no replacement will be granted until a valid purchase order is received. If no purchase order is received within 30 days after the date of TAGSYS quote, TAGSYS will return the products and charge the analysis cost and shipping costs.

All replaced Products shall become the property of TAGSYS.

The Product Return Form is included on the following page. This form should accompany any product you need to return to TAGSYS for analysis in the event of a problem

Product Return Form

Customer Profile:

Company: Contact Name:
 Address: Contact e-mail:
 Contact Phone:
 Contact Fax:
 City & State:
 Zip Code:
 Country:

Order identification:

Product Name: Invoice Number:
 Order Number (OEF): Return Quantity:

Parcel Pick up :

Length: Height:
 Width : Weight:

Address to collect the parcel :

.....

Contact: Phone:

Reason for return:

.....

To inform TAGSYS of this return, please email it to

RMA@tagsysrfid.com

Address to ship the product with this document attached:

TAGSYS

QUALITY DEPARTMENT

TAGSYS – 785 Voie Antiope, Athélia III,

13600 La Ciotat, France

To inform TAGSYS of this return, please also fax it to your Customer Service Representative

+33 (0) 4 42 18 89 01

Return Procedure

The product returned will go through stringent quality controls.

A final analysis report will be sent to you as soon as possible.

Please contact your Quality Service representative for further details at

+33 (0) 4 42 18 89 36